

10/529106

**IN THE CLAIMS:**

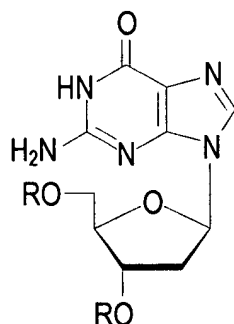
JC17 Rec'd PCT/PTO 25 MAR 2005

Claims 1, and 5-6 have been amended herein. Please note that all claims currently pending and under consideration in the referenced application are shown below. Please enter these claims as amended. This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1. (Currently amended) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) converting the 6-oxo group of a compound having the formula

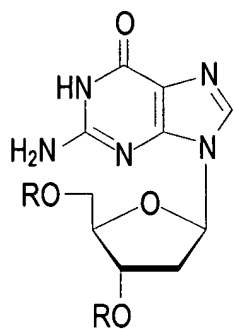


wherein R is a protecting group, into a 6-(substituted oxy) group having sufficient reactivity in an S<sub>N</sub>Ar displacement reaction;

- (b) replacing the 2-amino group with a 2-chloro group by a diazotization/chloro-dediazoniation reaction;
- (c) replacing the 6-(substituted oxy) leaving group with a 6-amino group; and
- (d) removing the R protecting groups, to produce 2-chloro-2'-deoxyadenosine.

2. (Original) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) converting the 6-oxo group of a compound having the formula



wherein R is a protecting group, into a 6-(substituted oxy) leaving group selected from the group consisting of (alkyl or any substituted alkyl or cycloalkyl)sulfonyl, phosphoryl or phosphonyl groups, (aryl or any substituted aryl)sulfonyl, phosphoryl or phosphonyl groups and a halogen group;

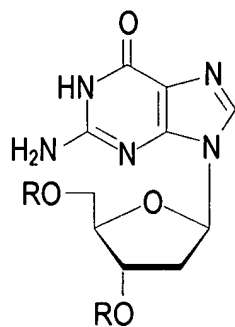
(b) replacing the 2-amino group of the product of step (a) with a 2-chloro group;

(c) replacing the 6-(substituted oxy) leaving group of the product of step (b) with a 6-amino group; and

(d) removing the R protecting groups, to produce 2-chloro-2'-deoxyadenosine.

3. (Original) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) reacting the 6-oxo group of a compound having the formula



wherein R is a protecting group, with reagents selected from the group consisting of (alkyl or any substituted alkyl or cycloalkyl)sulfonyl, phosphoryl or phosphonyl reagents and (aryl or any substituted aryl)sulfonyl, phosphoryl or phosphonyl reagents to produce a 6-O-(alkyl, substituted alkyl, cycloalkyl, aryl, or substituted aryl)sulfonyl, phosphoryl or phosphonyl group that is capable of hindering nucleophilic attack at the sulfonyl sulfur, phosphoryl or phosphonyl phosphorous and promoting nucleophilic attack at C6 upon subsequent ammonolysis;

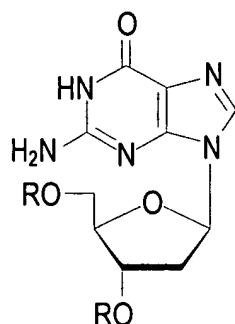
(b) reacting the product of step (a) with a halide source and a nitrite source in a solvent compatible with the halide source to replace the 2-amino group with a 2-chloro group;

(c) reacting the product of step (b) with a nitrogen source in a solvent compatible with the nitrogen source to replace the 6-(substituted oxy) leaving group with a 6-amino group; and

(d) reacting the product of step (b) or step (c) with a nitrogen source in a solvent compatible with the nitrogen source to remove the R protecting groups, to produce 2-chloro-2'-deoxyadenosine.

4. (Original) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) reacting the 6-oxo group of a compound having the formula



wherein R is a protecting group, with a halogen compound, to produce a 6-halo leaving group;

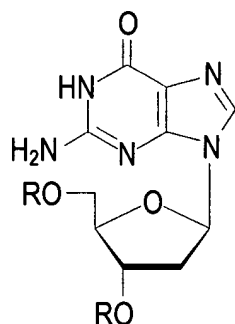
(b) reacting the product of step (a) with a halide source and a nitrite source in a solvent compatible with the halide source to replace the 2-amino group with a 2-chloro group;

(c) reacting the product of step (b) with a nitrogen source in a solvent compatible with the nitrogen source to replace the 6-halo leaving group with a 6-amino group by selective ammonolysis of the 6-leaving group; and

(d) reacting the product of steps (b) or (c) with a nitrogen source in a solvent compatible with the nitrogen source to remove the R protecting groups, to produce 2-chloro-2'-deoxyadenosine.

5. (Currently Amended) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

- (a) converting the 6-oxo group of a compound having the formula

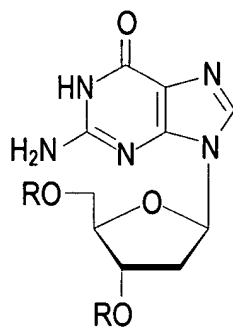


wherein R is a protecting group selected from the group consisting of acetyl, benzoyl, into a 6-leaving group having greater reactivity than that of the 2-chloro-2-amino group in a diazotization/chloro-dediazoniation ~~an S<sub>N</sub>Ar~~ displacement reaction;

- (b) replacing the 2-amino group with a 2-chloro group by diazotization/chloro-dediazoniation of the 2-amino group;
- (c) replacing the 6-leaving group with a 6-amino group by selective ammonolysis of the 6-leaving group; and
- (d) removing the R protecting groups by deacylation, to produce 2-chloro-2'-deoxyadenosine.

6. (Currently Amended) A method for producing 2-chloro-2'-deoxyadenosine comprising the steps of:

(a) reacting the 6-oxo group of a compound having the formula



wherein R is a protecting group selected from the group consisting of acyl and silyl, with an (alkyl or any substituted alkyl or cycloalkyl) sulfonyl or phosphoryl reagent or (aryl or any substituted aryl) sulfonyl or phosphoryl reagent to convert the 6-oxo group to a 6-O-(alkyl, cycloalkyl, or aryl) sulfonyl or phosphoryl group;

(b) reacting the product of step (a) with a halide and an organic nitrite in a solvent compatible with the halide to replace the 2-amino group with a 2-chloro group by diazotization/chloro-dediazoniatio of the 2-amino group;

(c) reacting the product of step (b) with ammonia in a ~~compatible~~ solvent ~~or~~ with a compatible with nitrogen source capable of being converted to an amino group in a solvent compatible with the nitrogen source to replace the 6-leaving group with a 6-amino group by selective ammonolysis of the 6-leaving group; and

(d) reacting the product of step (c) with a basic reagent in a compatible solvent to remove the R protecting groups by deacylation, to produce 2-chloro-2'-deoxyadenosine.